CHAPTER 5: UTILITIES ELEMENT

Contents

CHAPTER 5: UTILITIES ELEMENT

INTRODUCTION

The Growth Management Act defines electricity, gas, telecommunications, and cable as utilities. It defines water and sewer systems separately as public facilities. Plans for water supply and sewer are found as separate elements of the Comprehensive Plan. Transportation and circulation-related facilities are addressed in the transportation element. The Utilities Element has been developed in accordance with RCW 36.70A.070 of the Growth Management Act, WAC 365-195-320 (Utilities Element Requirements), and the King County Countywide Planning Policies. To fulfill the requirements set forth by the Washington Growth Management Act, the utilities element must include the following information:

1. Inventory the general location of existing utilities.

2. Establish the location of proposed utilities.

3. Examine the capacity of existing and proposed utilities.

The Utilities Element also includes an evaluation of solid waste management in North Bend, focusing on landfill capacity and recycling issues.

King County Countywide Planning Policies (CPPs) provide local direction to implement the GMA mandate for consideration of utilities needs including, but not limited to electrical, communications and natural gas. Following is a paraphrased listing of the CWPP's with direct applicability to North Bend in 2014. The policy number of each referenced policy is cited. Other CWPP's may be indirectly applicable to North Bend and the CWPP's may be revised in the future. The full list of CWPP's is available on the King County DDES website at http://www.metrokc.gov/ddes/compplan/CPP-current.pdf

Local jurisdictions are to identify the full range of urban services required as growth occurs and how they plan to provide them (CO-1). Service providers shall manage resources efficiently through regional coordination, sharing facilities and conserving resources (CO-2 and CO-3). Aggressive conservation shall be implemented to address the need for adequate supply of electricity (CO-6).

Unlike the Capital Facilities Element, levels of service and concurrency requirements do not apply to private utilities. They are required by state law to provide service to anyone requesting it who has the ability to pay for the extension. The Washington Utilities Transportation Commission (WUTC) requires

that privately owned utilities demonstrate that existing rate payers are not subsidizing new customers. Privately owned utilities are not public facilities although they provide a public service. They are required to provide the same level of service to urban and rural customers. The WUTC regulates utility and transportation providers to ensure safe and reliable service to customers at reasonable rates. Most of Washington State's investor-owned gas, electric, water and telecommunications are regulated by the WUTC.

In addition, due to concerns such as the security of facilities and in keeping with competition practices, the specific locations and specific market needs are not identified. Instead, general locations and general capacities are included in this element.

Financing of Utilities

The principle source of revenue for utility capital financing is charges to customers for utility services provided. Such charges include utility rate charges, other customer charges, fees, and charges for the sale of water and energy to other utilities. Revenue from customer charges is used to finance capital projects on a pay-as-you go basis or through the issuance of revenue bonds. For revenue bonds, principal and interest payments are made with revenue from utility customer charges. The State of Washington statutes permit cities to issue unlimited tax (voter-approved) general obligation debt for utility purposes up to a limit of 2.5 percent of a City's assessed valuation.

Provision of Utility Service

This section discusses the provisions of utility service by the City and by private entities. Each utility section includes a discussion of the existing inventory, existing facility capacity, and an assessment of future facilities, although financial information for privately-owned entities is not included in this plan.

Definitions, Abbreviations, and Acronyms

- kV – kiloVolt, a unit of electric potential equal to a thousand volts
- PSE – Puget Sound Energy
- V – Volt, The unit for electric potential

ELECTRIC SYSTEM

Description and Inventory

Electricity is provided to North Bend by Puget Sound Energy and Tanner Electric Cooperative. Puget Sound Energy (PSE) serves the majority of the electricity users within North Bend, with approximately 2,200 customers. Tanner Electric Cooperative and Puget Sound Energy signed a boundary agreement to define their respective service territories in 2013. The City of North Bend and the surrounding area will continue to be served by both PSE and Tanner Electric Cooperative.

Puget Sound Energy provides electric service to more than 1.1 million customers in eight predominantly Western Washington counties: Island, King, Kitsap, Kittitas, Pierce, Skagit, Thurston and Whatcom.

Tanner Electric Cooperative is a non-profit cooperative serving the electrical needs of its members. Tanner Electric serves members in the Ames Lake area of King County and Anderson Island in Pierce County in addition to its service in and around North Bend. In 2014 Tanner Electric served 4,638 meters overall and 2,037 in and around North Bend. Tanner Electric was formed in 1936 to serve areas deemed

not to be economically feasible by the private (for profit) power company. Over the years other areas took advantage of the cooperatives form of business and services and facilities were expanded.

The North Bend/Snoqualmie area includes several hydroelectric generating plants owned by PSE and other power producers: Snoqualmie Falls (PSE), Cedar Falls (Seattle City Light), and Weeks Falls, Twin Falls and Black Creek (owned by Independent Power Producers).

In 2002 Tanner Electric built its own power substation just west of North Bend on Alm Way. The North Bend substation is a 12kV system and has a capacity of 25MVA (33MVA during winter peaks). The Tanner Electric load for 2014 is over 13MW. The 115 kV transmission line serving the substation is owned by the Bonneville Power Administration and connected to the Puget Sound Energy transmission system in the Snoqualmie Ridge area. The areas served by Tanner Electric inside the city limits of North Bend are almost exclusively fed by underground circuits including the Factory Outlets, Forster Woods, Rock Creek Apartments and the south fork area.

The North Bend / Snoqualmie electrical sub-area is located east of Preston and between the Cedar River Watershed and the Tolt River Watershed. It includes the Fall City area, but not Carnation or Duvall. Within the sub-area, there are five hydroelectric developments. The generating plants within this area include the Snoqualmie Falls (owned by PSE), Cedar Falls (owned by Seattle City Light), and Weeks Falls, Twin Falls, and Black Creek (owned by independent power producers). Four distribution substations are located in the North Bend / Snoqualmie sub-area.

Existing Service

Distribution substations reduce voltage from 115 kV to 12 kV, which is Puget Sound Energy's standard distribution voltage. The 12 kV feeders distribute the power from these distribution substations to the individual customers. In residential areas, which is the predominate user in North Bend, winter outage scenarios usually determine when new distribution capacity improvements are needed.

A 115 kV transmission switching station (Snoqualmie Switch substation) is located adjacent to Snoqualmie Falls. This substation is considered a hub because it integrates the Snoqualmie Falls electric generation into the power system as well as providing an interconnection point for the power system. Two existing transmission lines connect to the Snoqualmie Falls generation complex; one line extends north to Fall City, one line extends south to North Bend continuing south to the Covington area, one line extends west to the Lake Tradition substation in Issaquah, and one line extends west to the Mount Si substation in Snoqualmie.

BONNEVILE POWER

Tanner Electric is a customer of Bonneville Power Administration (BPA). BPA is a federal nonprofit agency based in the Pacific Northwest. It is self-funded and covers its costs by selling its products and services. BPA markets wholesale electrical power from 31 federal hydro projects in the Columbia River Basin, one nonfederal nuclear plant and several other nonfederal power plants. The dams are operated by the U.S. Army Corps of Engineers and the Bureau of Reclamation. About 1/3 of the electric power used in the Northwest comes from BPA.

SNOQUALMIE FALLS HYDRO- ELECTRIC PROJECT

Puget Sound Energy's Snoqualmie Falls Hydroelectric Project is one of the oldest hydropower plants in the United States. The project contains a small diversion structure just upstream from the falls, and two powerhouses. Built in 1898-99, the first powerhouse is encased in bedrock 260 feet beneath the surface and was the world's first underground power plant. The second powerhouse was built in 1910 and is a quarter-mile downstream from the falls. The two powerhouses combined have 54 megawatts of generating capacity (enough to meet the peak electricity needs of about 25,000 households). (https://pse.com/inyourcommunity/king/Pages/Snoqualmie-Falls.aspx)

The Mount Si Substation was built at Snoqualmie Ridge in 2012. It provides both distribution capacity and a connection point for the three transmission lines that intersect at that location. The substation provides improved reliability for PSE's customers in Snoqualmie and North Bend as well as Tanner's North Bend customers.

There are two additional distribution substations (Snoqualmie and North Bend substations) which serve the North Bend area. From these two substations there are six distribution circuits serving the customers in the City of North Bend.

Future Demand

The forecasted load for the next 30 years will require systems improvements which are listed in this section as construction projects that are in progress, or as plans for the future. A project is considered in progress if specific site selection, preliminary engineering, permitting, or construction activities are currently underway.

New projects can be developed in the future at any time due to:

- new or replacement of existing facilities to increase capacity due to new building construction, as well as conversion of existing homes and businesses to other preferred fuel types (most typically from heating oil to natural gas);
- the need for replacement to facilitate improved maintenance of facilities;
- replacement or relocation of facilities due to municipal and state projects; and
- system upgrades required to accommodate third party interconnection of transmission or generation facilities.

Other system improvements may be needed within a 30 year horizon to serve forecasted load. PSE has two major substation projects planned in the 10 year horizon in the North Bend/Snoqualmie area. One near-term substation improvement project is anticipated to expand and upgrade PSE's existing North Bend substation to enable improved transmission connections. This will provide reliability improvements to customers served by the North Bend substation.

The other near-term substation improvement project is planned to expand PSE's existing Snoqualmie Switching Station to enable interconnection of a proposed small hydro project.

There are three possible long-range issues that need to be addressed in order to best serve the growth in the Snoqualmie/North Bend area:

1. the existing Cedar Falls-Snoqualmie 115 kV transmission line may become inadequate to serve the projected load increases in the area;
2. the lack of capacity to get power into the area when local generation may become inadequate to serve the local load; and

3. the existing substations may become insufficient to supply adequate 115-12 kV substation transformer capacity.

Construction projects in progress / Plans for the future/Recently Completed

Tanner Substation and 115kV Transmission Line

Tanner recently completed the construction of Tanner substation. In order to operate the substation, BPA built a transmission line tap (extension) from the existing Snoqualmie-Lake Tradition line #1 to the substation. The line is connected from the Mt. Si Substation to the Tanner substation. In the near future, the line will be extended to the new Middle Fork substation.

Additional Small Hydro

There are numerous proposals for small hydroelectric generation plants in the North Bend/Snoqualmie area. Most of these are located on the North Fork of the Snoqualmie River and its tributaries, including Hancock Creek and Calligan Creek. In addition, there are possibilities for others along the Middle Fork and the South Fork of the Snoqualmie River. Puget Sound Energy may need to construct facilities to interconnect these generation plants to the electric transmission system. A possible interconnection substation to integrate new generation would be a Reinig Switching Station located near the Snoqualmie-Cedar Falls line to connect the existing system to new generation with a new 115 kV line.

Transmission Line Rebuild

The Cedar Falls-Snoqualmie 115 kV line contains low capacity wires. At some point this line will need to be rebuilt.

Rattlesnake-Lake Tradition 230 kV Line

The Rattlesnake-Lake Tradition transmission line is a planned new 230 kV line, which would connect the existing cross-Cascades transmission line near Rattlesnake Lake southeast of North Bend to the existing Lake Tradition substation near Issaquah. This line would allow power generation in Eastern Washington to be supplied to King County as well as strengthen the power system in the North Bend area and the rest of King County.

Lantern Substation and 115 kV Transmission Line

The planned Lantern substation, located south of North Bend at a site to be determined in the future, would provide electric power to customers in the Southeast North Bend area. This would provide a possible interconnection point for existing and future transmission lines to improve reliability and capacity in the North Bend area.

Future Distribution Substations

At present, the timing of future distribution substations cannot be determined due to the uncertainty of load growth in this area, an island of urban development in a rural area. It is likely that the Snoqualmie/North Bend area may need an additional substation or an additional transformer in an existing substation after 2020.

NATURAL GAS

Description& Inventory

Puget Sound Energy is an investor-owned natural gas utility that supplies natural gas to six Western Washington counties: Snohomish, King, Kittitas, Pierce, Thurston, and Lewis. Puget Sound Energy provides natural gas service to more than 750,000 customers in six Western Washington counties: Snohomish, King, Kittitas, Pierce, Thurston, and Lewis. It is estimated that PSE currently serves over 2,800 customers within the City of North Bend.

Natural gas is not an essential service, and, therefore, is not mandated to serve. Extension of service is based on request and the results of a market analysis to determine if revenues from an extension will offset the cost of construction.

Natural gas comes from gas wells in the Rocky Mountains and in Canada and is transported through interstate pipelines by Williams Northwest Pipeline to Puget Sound Energy's gate stations.

Supply mains then transport the gas from the gate stations to district regulators where the pressure is reduced to less than 60 psig. The supply mains are made of welded steel pipe that has been coated and is cathodically[1] protected to prevent corrosion. They range in size from 4" to 20".

Distribution mains are fed from the district regulators. They range in size from 1-1/4" to 8" and the pipe material typically is polyethylene (PE) or wrapped steel (STW).

Definitions, Abbreviations, and Acronyms

- Btu – British thermal unit, One Btu is the heat required to raise the temperature of one pound of water by one degree Fahrenheit.
- cf – Cubic feet
- Mcf –equals the volume of 1,000 cubic feet of natural gas.
- Natural Gas is a fossil fuel formed when layers of buried plants, gases, and animals are exposed to intense heat and pressure over thousands of years. The energy that the plants originally obtained from the sun is stored in the form of chemical bonds in natural gas.
- psig – pounds per square inch gauge measures a unit of pressure. Psig indicates that the pressure is relative to atmospheric pressure, opposed to psia (absolute) which is relative to a vacuum.
- PSE – Puget Sound Energy
- Therm – One therm equals 100,000 Btu, or 0.10 MMBtu.
- WUTC – Washington Utilities Transportation Commission

Existing Service

According to PSE rate department, the average house (using natural gas for both heat and hot water) consumes about 1,000 therms per year. Ten therms equals approximately one "mcf" (thousand cubic feet) of gas so 1,000 therms per house equals approximately 100,000 cubic feet of gas per household per year.

[1] Cathodic Protection (CP) is a technique used to control the corrosion of a metal surface by making it the cathode of an electrochemical cell.

Individual residential service lines are fed by the distribution mains and are typically 5/8" or 1-1/8" in diameter. Individual commercial and industrial service lines are typically 1-1/4", 2" or 4" in diameter.

Future Demands

When planning the size of new gas mains, PSE uses a saturation model, which assumes all new households will use natural gas since 99% of new homes constructed where builders have the choice are using natural gas. PSE forecasts customer additions using a forecast analysis calculation based on PSE's revenue report which is generated by town tax codes established in our Exception Billings Department and based on historical customer counts.

Minimum pressure delivery through distribution pressure mains from a design standard is approximately 15 psig. If design pressures fall below 15 psig, there are several methods of increasing the pressure in the line, including:

1. Looping the distribution and/or supply lines to provide an alternative route for the gas to travel to an area needing additional supply. This method often involves construction of supply mains district regulators, and distribution mains;
2. Installing mains parallel to existing mains to supplement supply of natural gas to a particular service area; and
3. Replacing/upsizing existing pipelines to increase volume.

New projects can be developed in the future at any time due to:

1. New or replacement of existing facilities due to increase capacity requirements due to new building construction and conversion from alternate fuel;
2. Main replacement to facilitate improved maintenance of facility; and
3. Replacement or relocation of facilities due to municipal and state projects.

PSE makes an effort to coordinate construction work with municipal projects in order to minimize cost and impacts to surrounding community. Due to franchise agreements, PSE is required to relocate existing facilities.

Due to the growing popularity of natural gas in the North Bend and surrounding areas, PSE will continually evaluate the necessity of the above projects and alternatives. Changes in project route, construction schedule and detail could occur as they are dependent on budgets and WUTC cooperation.

TELECOMMUNICATION, CABLE & INTERNET

Telecommunication is a branch of technology that allows communication over a distance by transmission of electrical impulses, electromagnetic waves, or optical pulses, such as telephone, radio, television, or computer network. These services are provided by private firms and are often provided as packages.

Definitions, Abbreviations, and Acronyms

- DSL services – digital subscriber line (originally digital subscriber loop) is a family of technologies that are used to provide internet access by transmitting digital data over telephone lines.
- Optical fiber cable is a cable containing one or more optical fibers that are used to carry light. The optical fiber elements are typically individually coated with plastic layers and contained in a protective tube.
- WUTC – Washington Utilities Transportation Commission

Telephone

The local telephone service is provided by CenturyLink, which currently serves North Bend, Fall City, Carnation and surrounding areas. The system consists of a network of fiber optic cables and copper and other equipment facilities including central office and remote switches that support the fiber and copper infrastructure, which are located throughout the area.

To meet North Bend's future needs, CenturyLink follows the policy of extending its lines to serve customer needs within its territory boundary in accordance with its tariffs as filed under the WUTC.

Cable Broadband, Television, and Internet

Cable television service is offered through Comcast. Internet service is provided by both CenturyLink and Comcast. CenturyLink supplies DSL services and Norstar (telephone key systems for business accounts). Comcast is a global media and technology company as well as the nation's largest video, high-speed Internet and phone provider to residential customers. The system consists of a combination of fiber cable and coaxial cable.

Comcast plans to expand its facilities to new residential subdivisions as they develop throughout the City. Comcast is committed to evolving advanced broadband services to meet the future needs and desires of our cable customers. These advanced services include more digital and high-definition television signals, interactive television like Video-on-Demand and Digital Video Recorders that allow customers to watch what they want in the timeframe that is best for their schedules, and faster Internet speeds.

SOLID WASTE & RECYCLING

The 2013 King County Comprehensive Solid Waste Management Plan[2] guides solid waste disposal in King County. The Management Plan proposes strategies for managing the solid waste over the next six years, with consideration of the next 20 years. This is the first management plan that looks at ways to address climate change. The core mission of the KCCSWMP is to ensure the citizens of the county have access to safe, reliable, efficient, and affordable solid waste handling and disposal services.

Definitions, Abbreviations, and Acronyms

- KCCSWMP – King County Comprehensive Solid Waste Management Plan prepared by the Solid Waste Division of the Department of Natural Resources and Parks in accordance with Washington State law. It presents proposed strategies for managing King County's solid waste over the next 6 years with consideration of the next 20

Description and Inventory

North Bend, like most cities in King County, has signed an Interlocal Agreement with King County to provide solid waste planning within the City. The terms of the Solid Waste Interlocal agreement are in effect from March 19, 2013 through December 31, 2040. A number of responsibilities are designated to the County and cities in order to implement the King County Solid Waste Management Plan. The plan identifies that cities need to provide for collection of solid waste and ensure the provision of the minimum levels of collection service for recyclables and yard waste. Cities are also directed to implement requirements for new construction to accommodate recycling collection systems such as the following: a procurement policy (a policy favoring the use of recycles products and recyclable materials), variable can rates and a monitoring program. Cities are also asked to enforce City litter control ordinances. The cities are authorized under the plan to regulate and plan for the collection of special waste, to adopt and implement the solid waste plan, and to participate in the Solid Waste Advisory Committee and Regional Policy Committee.

Existing Service

Under the Interlocal Agreement, King County is responsible for solid waste management, planning, and technical assistance to cities. North Bend is responsible for solid waste collection. Republic Services is under contract with North Bend for weekly solid waste and curbside recyclable collection, and for every other week, collection of yard debris and disposal/recycling.

Toxic and hazardous wastes are disposed of at facilities in South Seattle and Bellevue. Waste collected in North Bend that cannot be recycled is transported by Republic Services to King County's Factoria Transfer Station in Bellevue or to their own Transfer Station in Seattle. King County and Republic Services then trucks the garbage to the Cedar Hills landfill; this facility received all of the mixed municipal solid waste (MMSW) generated in King County.

Future Demand

The City of North Bend and King County will continue offering service to existing and new residents meeting the standards found in the KCCSWMP. Refer to most recent edition of King County Comprehensive Solid Waste Management Plan for additional information regarding County inventory and policy.

[2] At the time of this publishing the 2013 King County Comprehensive Solid Waste Management Plan is in the process of being updated.

CEDAR HILLS LANDFILL

Cedar Hills is the only landfill still operating in King County. King County was able to extend the life of Cedar Hills from the expected closure in 2012 to 2025 (lifespan depends on a variety of factors, including tonnage received). The 2013 Solid Waste Plan recommends exploring a range of emerging technologies for future disposal other than exporting waste to a distant landfill when max capacity is reached at Cedar Hills. In 2009 Cedar Hills began operating a gas-to-energy process that burns gas created by the decomposition of waste into pipeline quality gas for the energy market. Bio Energy (Washington) LLC, owner and operator of this facility, has determined that the annual reduction in environmentally harmful carbon dioxide is the equivalent to 22,000 average passenger cars. The facility was generating enough energy to heat approximately 30,000 homes and sales of gas were expected to generate more than $1 million annually for the division. This will help fund future green disposal of waste in King County. (2013 King County Comprehensive Solid Waste Management Plan)

RECYCLING

Description and Inventory

"King County and the entire Puget Sound region are recognized for successful efforts to collect recyclable waste. Continuing to reduce and reuse waste will require concerted and coordinated efforts well in the future. It is important reduce the waste stream going into area landfills. This can be done by promoting recycling practices." (2013 King County Comprehensive Solid Waste Management Plan)

North Bend is served by Republic Services for recycling needs. Republic Services is an American company that was incorporated in 1998. Through a series of mergers and acquisitions, they became one of the largest waste and recycling companies in the United States. Republic Services serves 1,595 residential customers and 389 commercial customers in the City of North Bend. In 2013 Republic Services processed 1,053 tons of recycling repurposed into new products and converted 760 tons of organic waste to compost.

In addition, in an effort to reduce wastes, Republic Services implements a variety of public education programs. These programs include distributing flyers and brochures on reducing waste as well as monitoring garbage in order to advise customers on what can be recycled.

Existing Service

Refer to Figure 1: Existing Facility Service for Republic Service's synopsis of the year 2013 and services provided.

Future Demand

The City of North Bend and Republic Services will continue offering service to existing and new residents meeting the standards found in the KCCSWMP. Refer to Republic Services for additional information about existing and future goals and policies.

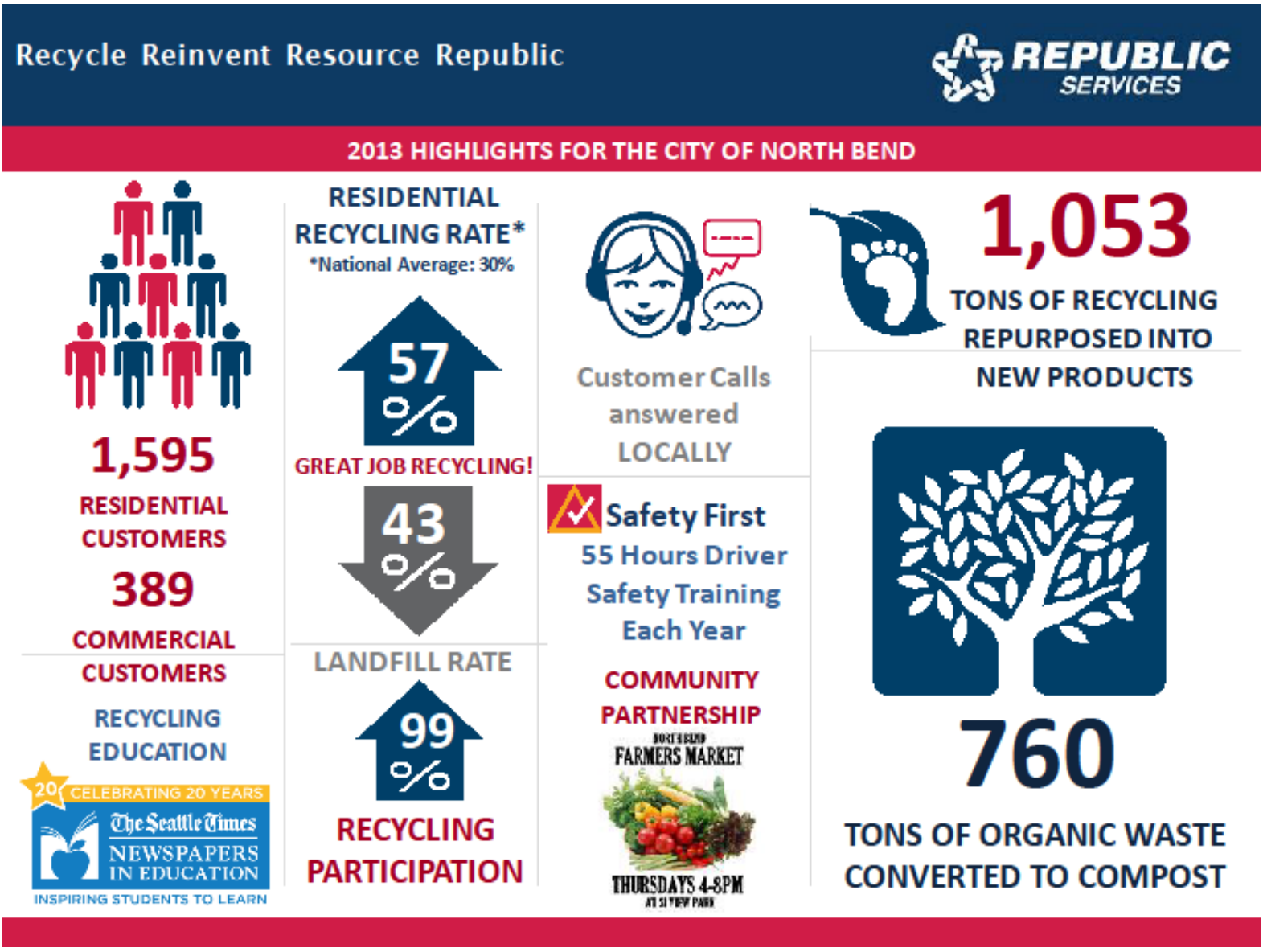

Figure 1: Existing Service, 2013

GOALS AND POLICIES

Utility - Goal 1:Provide utilities needed to accommodate growth and development according to adopted plan policies.

Policies:

U - 1.1 Continue to serve all customers that request utility service in the service area.

U - 1.2 Maintain the integrity of the utility infrastructure system to provide service to customers as a high priority for utility capital expenditures.

U – 1.3 Work to ensure communication providers are capable of providing advanced communication services utilizing the most current technology.

Utility - Goal 2: Cooperate with utility suppliers in the development, siting, maintenance, and repair of utilities.

Policies:

U - 2.1 Provide timely and effective notice to utilities of the construction, maintenance, or repair of streets or other facilities, and coordinate such work with utilities to ensure their needs are met.

U - 2.2 Require utilities notify the City before utility work is done to discuss the best means to preserve vegetation from utility work.

U - 2.3 Review utility permits simultaneously with development proposals requesting service.

Utility - Goal 3: Work with citizens, other jurisdictions, and utility providers to ensure cooperation in the siting of utilities and to ensure that reliable and cost effective suppliers of energy are available to meet increasing demands.

Policies:

U - 3.1 Encourage the multiple use of corridors for trails, transportation right-of-way and utilities.

U - 3.2Encourage the consolidation of utility facilities and communication facilities by prohibiting duplication of electrical substations, above ground electrical transmission lines and communication antenna structures within one mile of another similar facility.

U - 3.3 Require installation of fiber optic conduit at locations approved by City Engineer when roads are built or substantially reconstructed to facilitate future construction of local area fiber optic communications networks.

Utility - Goal 4: Ensure the compatibility of and minimize the environmental impacts associated with the siting, development, and operation of utility services and facilities on adjacent properties.

Policies:

U - 4.1 Work with the utilities to eliminate existing overhead power lines in the Urban Growth Area, with an emphasis on the downtown commercial zoning district.

U - 4.2 Develop regulations for siting and landscape requirements for utility meter cabinets, terminal boxes and similar above ground utility features.

U - 4.3 Where feasible, require installation of new power and communication lines to be placed underground.

Utility - Goal 5: Promote conservation through cooperative efforts of regulations, programs, and educational literature.

Policies:

U - 5.1 Work with the County and utility suppliers to develop public education and information materials that promote conservation.

U - 5.2 Handle and dispose of solid waste in ways that minimize pollution and protects the public health.

U - 5.3 Work with the City's solid waste collection agencies to establish cost-effective policies and regulations designed to minimize waste generation and meet King County's adopted waste reduction goals.

U - 5.4 Encourage utility providers to convert to cost effective and environmentally compatible alternative technology and energy sources.

U - 5.5 Require the provision of recycling opportunities in new construction projects.

U - 5.6 Encourage utility providers to develop outage reduction plans, develop initiatives to lower energy costs, create clean power sources and reduce greenhouse gas emissions.

APPENDIX A:

Definitions, Abbreviations, and Acronyms

- Btu – British thermal unit, One Btu is the heat required to raise the temperature of one pound of water by one degree Fahrenheit.
- cf – Cubic feet
- DSL services – digital subscriber line (originally digital subscriber loop) is a family of technologies that are used to provide internet access by transmitting digital data over telephone lines.
- KCCSWMP – King County Comprehensive Solid Waste Management Plan prepared by the Solid Waste Division of the Department of Natural Resources and Parks in accordance with Washington State law. It presents proposed strategies for managing King County's solid waste over the next 6 years with consideration of the next 20
- kV – kiloVolt, a unit of electric potential equal to a thousand volts
- Mcf –equals the volume of 1,000 cubic feet of natural gas.
- Natural Gas is a fossil fuel formed when layers of buried plants, gases, and animals are exposed to intense heat and pressure over thousands of years. The energy that the plants originally obtained from the sun is stored in the form of chemical bonds in natural gas.
- Optical fiber cable is a cable containing one or more optical fibers that are used to carry light. The optical fiber elements are typically individually coated with plastic layers and contained in a protective tube.
- PSE – Puget Sound Energy
- psig – pounds per square inch gauge measures a unit of pressure. Psig indicates that the pressure is relative to atmospheric pressure, opposed to psia (absolute) which is relative to a vacuum.
- Therm – One therm equals 100,000 Btu, or 0.10 MMBtu.
- V – Volt, The unit for electric potential
- WUTC – Washington Utilities Transportation Commission